wherein the film has an electrical resistivity greater than 10^2 ohm-cm.

22. (New) An electronic device comprising a first electrode, a second electrode, and the film of Claim 21 between said first and second electrodes.

23. (New) The device of Claim 22, wherein the electronic device is a light-emitting diode.

REMARKS

Claims 1-2, 4-5, 7-20, 21-23 are pending. Claim 1 is hereby amended to incorporate the recitation of Claim 3. As a result, the dependency of Claim 4 is hereby changed from Claim 1 to Claim 3; this change is made for cosmetic reasons, and not for reasons of patentability. Claim 5 is hereby amended to incorporate the recitation of Claim 6. New Claims 21-23 are added to recite further aspects of the invention.

Responsive to paragraph 2 of Paper No. 8, Applicants submit herewith a Petition Under 37 C.F.R. 1.78(a)(3) to accept unintentionally delayed claim under 35 U.S.C. 120 for the benefit of prior filed application no. 09/241,656. Since, as pointed out in paragraph 4 of Paper No. 8, this petition has direct bearing on the rejection under 35 USC 102(a) based on WO 99/39394 and the provisional rejection under 35 USC 102(e) based on copending application 09/241,656, Applicants submit that these two rejections are moot in light of this petition.

Responsive to paragraph 3 of Paper No. 8, Applicants hereby amend the specification at page 1 to remove the incorporation by reference language.

Responsive to paragraph 9 of Paper No. 9, Applicants amended Claims 7, 13, 16 and 20 to correct obvious typographical errors kindly pointed out by the Examiner. Such amendments are submitted for cosmetic reasons and not for reasons of patentability.

112 Rejection:

Responsive to paragraph 1 of Paper No. 7, Claims 3, 4, 6, 7, 10, 11, 15 and 16 have been amended to recite a "water

dispersible and/or water soluble" host polymer. This change is made for cosmetic reasons and not for reasons of patentability. The dependency of Claim 7 no longer needs to be changed, in light of the amendment to Claim 1. Claim 8 has been amended to further recite a first and second electrode, with the PANI-PAAMPSA film before said first and second electrodes; this change is made for cosmetic reasons and not for reasons of patentability. Similarly, Claim 13 has been amended to further recite a first and second electrode, with the PANI-PAAMPSA film before said first and second electrodes; this change is made for cosmetic reasons and not for reasons of patentability. Claims 15-20 have been amended to recite "diode"; this change is made for cosmetic reasons and not for reasons of patentability. Claim 20 has been amended to replace "PEDT" with its full chemical name "poly(3,4-ethylenedioxythiophene)" and to more specifically recite the suitable Group IIIA metals; this change is made for cosmetic reasons and not for reasons of patentability.

With respect to Claims 4, 7, 11 and 16 recitation of "cellulose derivative," Applicants submit that one of ordinary skill in the art understands the scope of this term of art. For example, the reference excerpt attached herewith recognizes that the term "cellulose derivatives" is a term of art that refers to esters and ethers of cellulose, as well as N_2O_4-oxidized cellulose, derivatives in which the hydroxyl group has been replaced by halogen, amino, or other groups (Ott, et al., Cellulose and Cellulose Derivatives, Part II, Chapter IX "Derivatives of Cellulose", pages 673-674 (Interscience Publishers, Inc. New York 1954)(attached as **Attachment A**). The remaining sections, denoted as "B" through "F," of Chapter IX in this reference go on to describe different types of cellulose derivatives (see **Attachment A**, pp 713, 755-756, 760-761, 763, 766-768, 785-787, 790, 797, 809, 812-816, 820, 823, 825, 847, 863, 871, 874, 879, 882, 888, 913, 930, 935-938, 945, 949, 959-960). Therefore, Applicants requests withdrawal of the indefiniteness rejection connected with this recitation.

Liu et al.

Claims 1, 3-8, 10, 11, 13,15 and 16 are rejected under 35 USC 102(b) under Liu et al. (5,489,400). Applicants submit that, the incorporation of the Claim 3 recitation into Claim 1 and the incorporation of Claim 6 recitations into Claim 5 make the rejections to Claims 1 and 5 moot. The present invention as recited in Claims 1 and 5 relate to a film wherein a PANI-PAAMPSA complex is blended with at least one water dispersible and/or water soluble host polymer. In contrast, Liu et al. describes a template-guided chemical polymerization process that forms a molecular complex of a polyelectrolyte and a conductive polymer (*see* e.g., Col. 3 lines 49-60). Liu et al. fails to teach or suggest a complex blended with a host polymer. Contrary to the examiner's assertions at paragraph 5, Paper No. 7, Liu et al. does not teach a water soluble host polymer. Rather, Liu et al. describes poly(acrylic acid)and poly-acrylamido-2-methyl-1-propanesulfonic acid) as suitable polyelectrolytes (see col. 3 lines 26-31), which:

> serves first as a template … that binds AN to form a template-(AN)n <u>complex</u>, which upon oxidative polymerization by an oxidant results in a molecular <u>complex</u> of a polyelectrolyte and a conductive polymer (Col. 3 lines 55-60)(underline added).

One of ordinary skill in the art understands that a PANI-PAAMPSA <u>blended</u> with a host polymer is quite different from a complex that includes poly(acrylic acid)or poly-acrylamido-2-methyl-1-propanesulfonic acid)as a component. Therefore, Claims 1 and 5 are patentable over Liu et al. Claim 4 is patentable over Liu et al. because it is dependent upon amended Claim 1. Claim 7 is patentable over Liu et la. because, as described above, Liu et al. fails to describe PAM or PAAMPSA as a host polymer that forms a blend with a PANI-PAAMPSA complex.

Claims 8, 10, 11, 13, 15 and 16 are patenable over Liu et al. because Liu et al. fails to describe an electronic device or a light-emitting diode. Moreover, Claims 10, 11, 15 and 16 are also allowable because Liu et al. fails to teach a film containing a blend.

Claims 2, 9, 12, 14, 17 and 18 were rejected under 35 U.S.C. 103(a) over Liu in Paper No. 7 Paragraph 8. Applicants traverse this rejection for the same reasons, as described above, that the anticipation rejection are traversed. Applicants respectfully requests withdrawal of this rejection.

Angelopoulos et al.

In Paper No. 7, paragraph 6, Angelopoulose et al. was cited as a anticipatory reference under 35 U.S.C. 102(e) against Claims 1, 3-8, 10, 11, 13, 15 and 16. Applicants traverse this rejection. Applicants submit that Angelopoulose et al. fails to teach a polymeric counterion, such as PAAMPSA recited in the present claims. Therefore, the film recited in Claims 1, 3-8, 10, 11, 13, 15 and 16 are patentable over Angelopoulose et al. Moreover, Angelopoulose et al. fails to teach a film that contains at least one water-soluble host polymer in addition to the doped PANI material, which feature also makes Claims 3,4, 6, 7, 10, 11, 15 and 16 patentable over Anglopoulose et al. Therefore, Applicants request withdrawal of this rejection.

In view of the foregoing, allowance of the above-referenced application is respectfully requested. This Amendment is timely filed within six months of the mailing date of June 18, 2002. A petition for a three-month extension of time is enclosed herewith.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In showing the changes, deleted material is shown as brackets [], and inserted material is shown underline.

IN THE CLAIMS:

1. (Amended) A PANI-PAAMPSA film comprising a PANI-PAAMPSA complex of polyaniline in the emeraldine salt form (PANI) with poly(2-acrylamido-2 methyl-1-propanesulfonic acid) (PAAMPSA) as a counterion, and at least one water dispersible and/or water-soluble host polymer blended with the PANI-PAAMPSA complex .

4. (Amended)The film of Claim [3] 1, wherein the water dispersible and/or water-soluble host polymer is polyacrylamide (PAM), PAAMPSA, poly(acrylic acid) (PAA), poly(styrenesulfonic acid), poly(vinyl pyrrolidone)(PVPd), acrylamide copolymers, cellulose derivatives, carboxyvinyl polymer, poly(ethylene glycols), poly(ethylene oxide) (PEO), poly(vinyl alcohol) (PVA), poly(vinyl methyl ether), polyamine, polyimines, polyvinylpyridines, polysaccharide, polyurethane dispersion, and combinations thereof.

5. (Amended)A method of forming the film of Claim 1, comprising the steps of:

providing a substrate;

providing an aqueous dispersion/solution comprising the at least one water dispersible and/or water-soluble host polymer blended with the PANI-PAAMPSA complex; and

depositing the aqueous dispersion/solution onto the substrate to form the film.

7. (Amended)The method of Claim 5, wherein the water dispersible and/or water-soluble host polymer is polyacrylamide

(PAM), PAAMPSA, poly(acrylic acid) (PAA), poly(styrenesulfonic acid), poly(vinyl pyrrolidone)(PVPd), acrylamide copolymers, cellulose derivatives, carboxyvinyl polymer, poly(ethylene glycols), poly(ethylene oxide) (PEO), poly(vinyl alcohol) (PVA), poly(vinyl methyl ether), polyamine, polyimines, polyvinylpyridines, polysaccharide, polyurethane dispersion, and combinations thereof.[.]

8. (Amended)An electronic device comprising a first and second electrodes, and a PANI-PAAMPSA film between said first and second of electrodes, said PANI-PAAMPSA film comprising polyaniline in the emeraldine salt form (PANI) with poly(2-acrylamido-2 methyl-1-propanesulfonic acid) (PAAMPSA) as a counterion.

10. (Amended)The electronic device of Claim 8, wherein the film further comprises at least one water dispersible and/or water-soluble host polymer.

11. (Amended)The electronic device of Claim 10, wherein the at least one water dispersible and/or water-soluble host polymer is polyacrylamide (PAM), PAAMPSA, poly(acrylic acid) (PAA), poly(styrenesulfonic acid), poly(vinyl pyrrolidone)(PVPd), acrylamide copolymers, cellulose derivatives, carboxyvinyl polymer, poly(ethylene glycols), poly(ethylene oxide) (PEO), poly(vinyl alcohol) (PVA), poly(vinyl methyl ether), polyamine, polyimines, polyvinylpyridines, polysaccharide, polyurethane dispersion, and combinations thereof.

13. (Amended)A light-emitting diode comprising a first and second electrodes, and a PANI-PAAMPSA film, said PANI-PAAMPSA film comprising polyaniline in the emeraldine salt form (PANI)

with poly(2-acrylamido-2 methyl-1-propanesulfonic acid) (PAAMPSA) as a counterion.

15. (Amended)The [device] diode of Claim 13, wherein the film further comprises at least one water dispersible and/or water-soluble host polymer.

16. (Amended)The [device] diode of Claim 15, [where in] wherein the at least one water dispersible and/or water-soluble host polymer is polyacrylamide (PAM), PAAMPSA, poly(acrylic acid) (PAA), poly(styrenesulfonic acid), poly(vinyl pyrrolidone)(PVPd), acrylamide copolymers, cellulose derivatives, carboxyvinyl polymer, poly(ethylene glycols), poly(ethylene oxide) (PEO), poly(vinyl alcohol) (PVA), poly(vinyl methyl ether), polyamine, polyimines, polyvinylpyridines, polysaccharide, polyurethane dispersion, and combinations thereof.

17. (Amended)The [device] diode of Claim 16, wherein the film has an electrical resistivity greater than 10^4 ohm-cm.

18 (Amended)The [device] diode of Claim 16, wherein the film has an electrical resistivity of greater than 10^5 ohm-cm.

19. (Amended)The [device] diode of Claim 13, wherein the film is disposed between a light-emitting polymer and a high work function electrode.

20. (Amended)The [device] diode of Claim 19, wherein:

the high work function electrode comprises polyaniline[,]; [PEDT] poly(3,4-ethylenedioxythiophene)[,]; indium tin oxide[,]; an oxide of a metal from Group IIA (Be, Mg, Ca, Sr, Ba, Ra)[,];an oxide of [other]metals from Group[s] IIIA [(]

selected from B, Al, Ga, and Tl[)]; or an oxide of metals from Group IVA (C, Si, Ge, Sn, Pb); and

wherein the device further comprises a low work function electrode selected from alkaline earth metals, alloys of alkaline earth metals, and alkaline earth metal oxides.

ATTACHMENT A

Ott, et al., Cellulose and Cellulose Derivatives, Part II, Chapter IX "Derivatives of Cellulose", pages 673-674, 713, 755-756, 760-761, 763, 766-768, 785-787, 790, 797, 809, 812-816, 820, 823, 825, 847, 863, 871, 874, 879, 882, 888, 913, 930, 935-938, 945, 949, and 959-960 (Interscience Publishers, Inc. New York 1954.